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(71) Applicant: DIXON-MANNING SALES AND MARKETING LIMITED
Hooks Farm Woods Corner Dallington
Heathfield East Sussex TN21 9LL (GB)

(72) Inventor: Dixon, John A.
Hooks Farm Woods Corner Dallington
Heathfield East Sussex, TN21 9LL (GB)

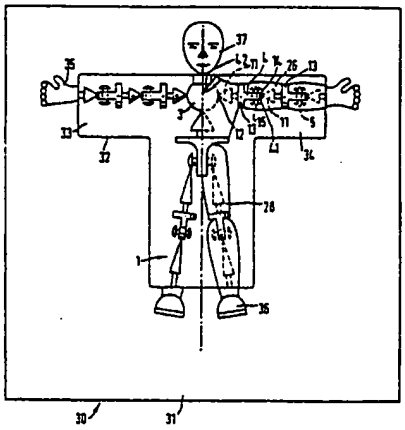
Manning, Peter
Wathen Cottage Lower Meend St. Briavels
Gloucestershire, GL15 6RW (GB)

(74) Representative: Deans, Michael John Percy et al
Lloyd Wise, Tregear & CO. Norman House 105-109 Strand
London WC2R 0AE (GB)

## (54) Toys.

(57) A toy includes a plurality of portions adapted for articulation relative to each other. The toy has a skeleton for which there are at least skeleton members corresponding to each portion of the toy other than portions at the extremeties of the toy. The skeleton is moulded as a single integrated structure with each skeleton member generally rigidly connected to the or each neighbouring skeleton member by a respective relatively narrow breakable region. The toy additionally comprises, for each portion of the toy for which there is a corresponding skeleton member, a body member injection moulded generally around an end part of the corresponding skeleton member and also around the adjacent end part of each or any skeleton member to which the first mentioned end part is connected by one of the relatively narrow breakable regions. To complete the articulated toy, the various narrow breakable regions are broken after moulding of the body members.

FIG. 4



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**Description**

# TOYS

This invention relates to toys and in particular to articulated toys in which adjacent portions of the toy are jointed relative to each other.

By the term "articulated toy" as used in this specification we intend to encompass not only toy figures representing human, humanoid, animal or similar creatures and robotic equivalents, but in addition construction toys of various kinds, as for examples toy space stations in which one part of the toy is selectively articulatable relative to an adjacent section of the toy.

For ease of description, the present invention and its background will be described below in terms of the construction of a generally human doll, but it is to be understood that the invention is not limited to human dolls.

The construction by conventional injection moulding techniques of even the simplest articulated doll in which the head is rotatable on the neck relative to the thorax and the arms and legs are simply pivotable about an axis as a whole at the shoulders and hips involves seven separate injection mouldings and fabrication steps to connect them together to produce the finished figure, involving significant labour costs. A more sophisticated figure involving a simulation of upper arm movement at the shoulder and movement at the elbow, wrist and knee can involve as many as thirty component parts and thirty-eight separate fabrication steps. It is not surprising, therefore, that such figures are expensive to produce. Moreover, since they involve so many parts and so many fabrication steps, there are numerous points of possible failure. The finished toy tends to have a relatively short useful life with all its limbs intact. Generally these complicated figures require screws or rivets to hold the figure together. These are unreal and unsightly.

Our United States Patent 4571209, the disclosure of which is hereby incorporated by reference, represents a major improvement in moulding and fabrication techniques for articulated toy figures. As can best be seen in Figs. 5a and 5b of our aforesaid U. S. Patent 4571209, that patent teaches that by the use of a simple two-part mould employing different mould inserts, the moulding steps may be reduced to two or at most three moulding steps. The first moulding step produces a generally rigid structure comprising the head, the hands, the feet and the thighs together with a skeleton structure for the arms, the thorax, and the lower legs. The second moulding step moulds the same or a different material about the skeletal structures of the arms, the thorax and the lower legs. The skeletal structures include a number of breakable joints which on breaking provide articulation including rotation and pivotal motion as appropriate in different joints.

There is no teaching in U.S. Patent 4571209 for providing a complete skeletal structure for the figure as the moulds of Figs. 5a and 5b of U. S. Patent 451209 and all the embodiments of figure described in detail therein have solid thighs.

Japanese Patent Application laid open Nos. 62-50109, 62-50112, 62-50113 and 62-68713 (Bandai), the disclosures of which are closely similar, disclose a moulding and fabricating technique for articulated toy figures in which the limbs are constructed by successive moulding steps in which joints are provided by a multi-step moulding operation in which plastic is moulded about a first series of members aligned in appropriate positions and placed in situ. The resulting structure is relatively rigid but is not a skeletal structure since it is only the sprues in the first moulding which hold the various elements of the several joints together. The final step of the Bandai fabrication method is the breaking of reduced section points, these points being the external points of connection with the sprues in the Bandai arrangement.

The present invention arises from our work seeking to improve and simplify moulding and fabrication techniques for articulated toy figures.

It has generally not been possible heretofore to provide an articulated toy figure in which all the body portions have a soft feel like flesh. Where fleshy parts have been provided in articulated toy figures heretofore, these fleshy parts have generally been restricted to the distal extremities such as the hands and head. In practice it has proved impossible to provide the whole body with a soft exterior fleshy feel without having to resort to highly sophisticated and labour intensive construction techniques resulting in a product which is virtually unsaleably expensive.

In accordance with one aspect of the present invention, we provide a toy including a plurality of portions adapted for articulation relative to one or more adjacent said portions; the toy having a skeleton comprising, at least for each said portion of the toy other than portions at extremities of the toy, a skeleton member; said skeleton being moulded as a single integrated structure with each skeleton member generally rigidly connected to the (each) neighbouring skeleton member by a respective relatively narrow breakable region; and the toy additionally comprising for each said portion of the toy for which there is a corresponding skeleton member a body member injection moulded generally around an end part of the said corresponding skeleton member and also around the adjacent end part of the, each or any skeleton member to which the first mentioned end part is connected by a said relatively narrow breakable region. The invention also extends to a toy as so defined in which each said breakable region is broken, thereby providing articulation between adjacent said portions of the toy.

In a second and alternative aspect of the present invention, there is provided a method for the construction of an articulated toy, the method comprising moulding a single integrated skeletal structure comprising a plurality of members each generally rigidly connected to at least one other said

member by a relatively narrow breakable region; carrying out a second moulding operation about a said skeletal structure whereby to provide a plurality of separate outer body portions about said skeletal structure adapted together to form a generally complete outer body for said toy figure apart from extremities thereof, each said outer body portion being formed generally about an end part of one said member and also about the adjacent end part of the, each or any other said member to which the first mentioned end part is connected by a said relatively narrow breakable region; and, at a time subsequent to completion of said second moulding operation and removal of said integrated skeletal structure together with said outer body portions from the mould employed for said second moulding operation, breaking said breakable regions to confer articulation to said toy.

As will readily be appreciated the skeleton as defined above incorporated in the aforesaid toy and the integrated skeletal structure defined above and employed in performing the construction method are essential elements for putting the invention in those respective aspects into practice. Particular said skeletons are the subject of further aspects of the invention.

In accordance with one said further aspect of the present invention, we provide a skeleton for use in the construction of an articulated toy figure representing a human, humanoid, animal or similar creature or a robotic equivalent, the skeleton comprising a head member including a ball arranged to be located within the thoracic region of the finished toy figure and a plurality of additional skeleton members, the head member and the additional skeleton members being moulded as a single integrated structure with each said additional skeleton member being generally rigidly connected to the head member or to a neighbouring additional skeleton member via a tapered region terminating in a relatively narrow breakable region, which breakable regions are adapted to be broken without loss of material in the completed toy figure thereby to provide articulation between head and thorax, limbs and thorax and between respective segments of the limbs.

In a further aspect of this invention, there is provided a skeleton for use in the construction of an articulated doll representing a human or humanoid figure or a robotic equivalent, the skeleton comprising a head member terminating in a ball, respective upper arm members connected to the ball by respective relatively narrow breakable regions, corresponding lower arm members connected to the upper arm members by respective relatively narrow breakable regions, a pelvic member connected to the ball by a relatively narrow breakable region, respective thigh members connected to the pelvic member by respective relatively narrow breakable regions and corresponding lower leg members connected to the corresponding thigh members by respective relatively narrow breakable regions; the skeleton being moulded as a single integrated structure, and the breakable regions being adapted to be broken without loss of material in the completed toy thereby providing movement in the completed toy doll simulating head and neck movement relative to the trunk, rotation of the trunk relative to the pelvis, movement of the legs relative to the pelvis, and shoulder, elbow and knee movement. The head member of the skeleton may be formed as a projection over which a selected head and facial expression member representing a particular character may be pushed. Hands and/or feet or footwear members may be similarly provided separately from the skeleton and adapted for coupling thereto either at the whim of a child in play with the finished toy or as a selected step in construction of a variety of character dolls utilising one and the same skeleton.

Since the skeleton with which the present invention is concerned is an essentially complete skeleton (with the possible exception of the extremities such as the hands, feet and head and face), for each main segment of the body such as lower arm, thigh or thorax in a toy figure there will be a body member moulded over and about the corresponding part of the skeleton; that body part may be formed of a different and significantly less rigid plastics material from the relatively rigid plastics material from which the skeleton is moulded. Accordingly, these outer body portions which, being moulded about the skeleton are not readily detachable, may be given a squashy or fleshy feel. Consequently, by the use of such material and following the teachings of this invention, it becomes possible at economic construction costs to produce a toy figure in which essentially all the body portions have a soft feel like flesh. The invention can thus be applied to a posable doll or animal where the movements at the joints generally simulate those of a real creature, and in which because the toy or animal has a soft squashy fleshy exterior, it seems to the child more "real".

The invention is hereinafter more particularly described by way of example only with reference to the accompanying drawings in which:-

Fig. 1 is a perspective view of a skeleton in accordance with the present invention for the construction of an articulated toy figure;

Fig. 2 is a similar perspective view of body members which in practice of the invention are moulded in situ about respective portions of the skeleton of Fig. 1 to produce a complete toy figure;

Fig. 3 is a perspective view of the complete toy figure so resulting, prior to breaking of the respective breakable regions;

Fig. 4 is a generally schematic view of a mould for moulding the toy of Fig. 3 in two stages; the left-hand side of Fig. 4 shows a first stage mould block within an outer mould tool and with the skeleton moulded in situ therein; while the right-hand side of Fig. 4 shows a second stage mould block within the same outer mould tool and with respective body members moulded in cavities of said second stage mould block about the skeleton in situ; and

Fig. 5 is a view generally similar to Fig. 4 illustrating a modification in which the figure is formed without head, hands or feet.

Referring first to Fig. 1 of the accompanying drawings, the skeleton 1 there illustrated is intended for use in the construction of a human doll. It has a head member 2 including a ball 3 at one end. As will be explained below, the ball 3 is arranged in the finished figure to be located within the thoracic region thereof. There are a plurality of additional skeleton members including respective upper arm members 4, lower arm members 5, hand members 6, a pelvic member 7, thigh members 8 and lower leg members 9 which in this embodiment terminate in fixed boots 10. The skeleton is moulded as a unitary structure and, for this purpose, the ball 3 would be provided with an injection gate (not shown) for the introduction of molten plastics material into a mould, as described in more detail below with reference to Figs. 4 and 5. Molten plastics so injected then flows through small conduits from one mould cavity to another to form the respective skeleton members 4 to 9 inclusive. It will be noted that each of the additional skeleton members is generally rigidly connected either to the head member or to another of the additional skeleton members via a tapered region 11 which in each case terminates in a relatively narrow breakable region 12.

Referring again to Fig. 1, it will be noted that each upper arm member 4 includes a flange 13 which in the finished figure serves as half of a 360° rotation joint at the shoulder. The upper arm member 4 also includes a longitudinally extending flange 14 from which protrude sideways extensions 15 which are generally mushroom shaped, having a stem 16 and a cap 17.

The lower arm members 5 have a generally similar configuration to the upper arm members 4 but with the respective proportions differing slightly as appropriate for a lower arm.

Extensions 15 of upper arm element 4 provide half of 180° rotation hinge joints positioned at the shoulders of the figure while the extensions 15 of the lower arm member 5 provide half of 180° rotation hinge joints at the elbows. Flange 13 of lower arm member 5 forms half of a 360° rotation joint at the elbows.

Either to restrict the freedom of movement at a joint or to cause the members to temporarily lock in a predetermined articulated condition, the extensions 15 may be provided with detents (not shown) in the stem 16 or cap 17 of extensions 15.

The hand member 6 represents one example of a limb termination member and consists simply of a representation of a hand, the tapered portion 11 as aforesaid and an intervening extension 18 defining a gap between the tapered portion 11 and the hand representation for one half of the 360° hand rotation at the wrist.

Pelvic member 7 comprises a tapered portion 11 as aforesaid, a reduced section extension piece 19 best shown in Figs. 4 and 5 and a generally T-shaped piece defining sideways extending flanges 20 which, as best shown in Figs. 3, 4 and 5 define a waist or belt region for the figure and a central flange 21 from which protrude respective sideways projections 22 similar in configuration but greater in size than the projections 15 mentioned above. It will be noted that the breakable portions 12 intermediate the thigh members 8 and the pelvic member 7 are provided between the tapering regions 11 of the thigh members and caps 23 of the projections 22.

The thigh members 8 are generally similar in configuration to the upper arm members 4 and lower arm members 5 except that the longitudinal extension joining the tapered region 11 with the flange 13 in this case has rib extensions 24. In the completed joint these ribs 24 have the effect of preventing rotation at the knee, thereby better simulating real life. Of course, if the skeleton were being designed to represent a non-human creature with unconventional jointing between its limb segments, then the ribs 24 may be omitted. The foot members 9 represent further examples of limb termination members and are generally similar in configuration to, while differing in detail and in proportion form, the hand portions 6. The term 'foot member' is to be taken to comprise feet whether clothed or not.

To complete the figure, the skeleton 1 requires outer body portions. These are illustrated in Fig. 2, and comprise a full set of thorax 25, upper arm body members 26, lower arm body members 27, thigh body members 28 and lower leg body members 29. It should be understood that each of these body members is formed in a single piece by injection moulding by a method described below with reference to Figs. 4 and 5, the result being the figure 30 shown in Fig. 3. It will be noted in Fig. 3 that the flanges 13 and 20 all extend to the surface of the finished figure and serve to divide one outer body portion from the next. In this particular embodiment all the bodily extremities, namely the face and head 2 and the hands 6 and feet or footwear 10 are all formed as parts of the skeleton and so are necessarily formed of a relatively rigid plastics material. The material of the body portions 25 to 29 inclusive may be substantially softer than the material of the skeleton giving a feel of flesh. As will be explained below with reference to Fig. 4 and more particularly Fig. 5, it is also possible to provide hands, feet and head and face of a softer material without departing from the benefits of this invention.

We shall now explain the moulding procedure with reference to Figs. 4 and 5. Fig. 4 shows a somewhat schematic view of the lower half of a mould suitable for forming the figure of Fig. 3. The mould 30 comprises a main outer tool 31 having a generally T-shaped cavity 32 in which are received first and second stage mould blocks 33, 34, the first stage mould block 33 being shown on the left of the figure and the second stage mould block 34 being shown on the right of the figure. The outer mould tool also includes cavities formed therein defining hands 35, footwear 36 and a head 37. The mould should be of the kind which operates by a simple open and shut movement to open and shut the two halves of the tool.

The first stage mould block 33 has cavities formed therein defining the parts of the skeleton 1 apart from the cavities formed in the main outer tool for the head, hands and feet or footwear. The second stage mould block 34 has cavities corresponding to the entire figure with the exception of hands 35,

footwear 36 and head 37. Moulding is carried out as follows:

First Stage

1. The main outer tool halves are closed together with the first stage mould blocks mounted in the cavity 32.

2. Plastics material is injected into the mould and allowed to cool.

3. The first stage mould blocks are separated and removed from the mould leaving the skeleton held in position in the outer tool at its head, hands and feet.

4. The main outer tool is moved to the side in position to receive second stage mould blocks.

Second Stage

1. The second stage mould blocks are closed about the skeleton in situ and the second stage moulding material is injected and allowed to cool.

2. The main outer tool together with the second stage mould blocks is opened and the product ejected.

3. The main outer blocks are returned to the position for insertion of the first stage mould blocks and for the first stage to be commenced afresh.

Third Stage

1. The figure is painted while still rigid.

2. The figure is flexed to snap the components of the skeleton apart at the breakable portions 12.

The material employed in the first stage for producing the skeleton and in the second stage for producing the outer body portions about the corresponding portions of the skeleton are suitably different. To facilitate separation of the skeleton members at the breakable portions 12, the plastics material for the skeleton may be glass-filled to make the breakable portions relatively more brittle.

Even where the plastics materials for the skeleton and for the outer body portions are the same, since there will be a tendency for injected plastics material to form a skin against any relatively cool surface it encounters in the mould, while still being molten behind the skin, there will be a tendency for the second stage plastics material to form a skin against components of the skeleton as well as against the surfaces of the mould cavity in the second stage mould blocks. Any risk of fusing between the two plastics materials when the second stage moulding operation is performed can be reduced either by choosing a material for the second moulding operation which differs significantly from that of the first (for example nylon for the first and styrene for the second) or by washing the skeleton 1 with a mould release agent or lubricant before proceeding to the second stage of the moulding operation.

Fig. 5 shows a variation of the mould of Fig. 4 for producing a skeleton with the hand member omitted and with bodily extremities in the form of mere projections at the feet and head rather than properly formed feet or footwear and head and face. For this purpose, the outer mould member 31 is provided with cavities at the feet and head corresponding to the projections 38 at the feet and 39 at the head; and, in place of the hand cavities of the mould of Fig. 4, the mould of Fig. 5 has inwardly extending projections 40 at the positions of the hands. For clarity in illustration, shade lines have been added to Fig. 5 to show the parts of the outer mould 31.

The moulding procedure with the modified mould of Fig. 5 corresponds exactly with the moulding procedure for the mould of Fig. 4 described above. The resultant figure, however, has cavities (negative of the projections 40) left at the distal ends of the lower arm members 27 for the selective insertion either by the manufacturer or by a child in play with the toy of a desired hand, possibly wielding a weapon, or glove, etc. Where the feet would be in the finished toy there is a mere projection 38. Again, either in manufacture or at the whim of a child in play, selected footwear, or alternatively the representation of a foot having a negative cavity corresponding to the projection 38 is pushed over the projection. Similarly, either in manufacture or at the whim of a child in play, a selected head is pushed onto the projection 39, the head being provided with an internal cavity for receiving the projection.

It will be readily appreciated by persons in this art that the means illustrated in Fig. 4 whereby the hand can be selected after the moulding operation and the manner in which the foot can be selected after the moulding operation may be different as shown here or the same producing projections both at hand and foot or alternatively cavities both at hand and foot for receiving hand and foot members carrying projections.

Referring again to Fig. 4, and in particular the right-hand side thereof, when the breakable region 12 between ball 3 and upper arm member 4 is broken, the arm as a whole can rotate at the shoulder but is held in place by the plastics material of the thorax flowing into the region between the tapered portion 11 and the flange 13. As will be understood, the plastics material of the upper arm body portion flows between tapered portion 11 and flange 13 of lower arm skeleton member 5 in exactly the same way so as to hold the lower arm fixed to the upper arm, but with rotation possible at the elbow.

As can be seen in Figs. 2, 3, 4 and 5, the sides of the upper arm outer body portion 26 are provided with slots 41 in which the longitudinally extending flange 14 of the upper arm skeleton member lies. Since the material of the upper arm body portion 26 flows about the mushroom shaped extensions 15 of the upper arm skeleton member 4 in the second stage moulding operation, the result is that the upper arm body portion is held firmly in place on the upper arm skeleton member against detachment. The mushroom shaped extensions serve as pillars for rotation of the upper arm to simulate shoulder movement.

As will be understood there is a similar construction at the elbow and at the knee and further description is accordingly deemed unnecessary for the skilled man to obtain a full understanding.

With reference to the knee joint, however, since

the plastics material of the thigh outer body portion 28 flows about the corresponding portion of the skeleton thigh member 8 in the second stage moulding operation, the effect of the ribs 24 is to serve as keys preventing rotation within the thigh body portion of the thigh skeleton member 8 and thus of the lower leg relative to the thigh, again to simulate real life.

It will be noted, particularly from Figs. 3, 4 and 5 that the neck opening 42 to the thorax is deliberately made wide so as to accommodate substantial movements left and right and up and down of the head relative to the body. Detents or projections may be added to the neck opening 42 or to the ball 3 to prevent the head from making a complete 360° rotation.

Although the embodiments specifically described will provide a human or humanoid articulated toy doll, it will readily be appreciated that the teachings of this invention can be applied equally well to the construction of toy animals of various kinds, whether mammalian, reptilean or invertebrate or to the construction of so-called "extraterrestrial aliens" of bizarre configuration.

When it is desired to produce figures represent a series of characters from a television series or a feature film, the same embodiment of skeleton with projections at the bodily extremities for subsequent addition of an appropriate head and selected hand and foot members may be used with alternative second stage mould blocks to form body parts of configuration appropriate to the particular character. For example one may have body parts of muscular configuration, another of wizened or portly configuration.

The invention is also not restricted to the construction of figures. Its teachings may be applied to articulated vehicles, space stations in which parts of the space station articulate relative to each other, jointed crane elements, etc. The invention can also be embodied in a wholly abstract fashion in which the "limbs" are simply abstract shapes and may be connected one to the other in any possible variation but with a degree of articulation relative to each other.

## Claims

1. A toy including a plurality of portions adapted for articulation relative to one or more adjacent said portions, characterised in that the toy has a skeleton comprising, at least for each said portion of the toy other than portions at extremities of the toy, a skeleton member; in that the said skeleton is moulded as a single integrated structure with each skeleton member generally rigidly connected to the (each) neighbouring skeleton member by a respective relatively narrow breakable region; and in that the toy additionally comprises for each said portion of the toy for which there is a corresponding skeleton member a body member injection moulded generally around an end part of the said corresponding skeleton member and also around the adjacent end part of the, each or any skeleton member to which the first mentioned end part is connected by a said relatively narrow breakable region.

2. A toy according to Claim 1, further characterised in that each said body member, in relation to the or any said skeleton member with which it is associated by being moulded in part thereabout, is either relatively rotatable with respect thereto or relatively pivotable with respect thereto.

3. A toy according to Claim 2, further characterised in that the toy represents a human, humanoid, animal or similar creature or a robotic equivalent; and in that the said body portions consists of a thorax and two or more limbs, the skeleton comprising a head member including a ball located within the thorax and a plurality of limb members.

4. A toy according to Claim 3, further characterised in that the skeleton comprises, in addition to the said head member: respective upper-fore-limb or arm members connected to the ball by respective relatively narrow breakable regions, corresponding lower-fore-limb or arm members connected to the upper-fore-limb or arm members by respective relatively narrow breakable regions, a pelvic member relatively narrow breakable regions, a pelvic member connected to the ball by a relatively narrow breakable region, respective upper-hind-limb or thigh members connected to the pelvic member by respective relatively narrow breakable regions and corresponding lower-hind-limb or leg members connected to the corresponding upper-hind-limb or thigh members by respective relatively narrow breakable regions.

5. A toy according to Claim 3 or Claim 4, further characterised in that the said skeleton additionally comprises hand or foot members terminating each said limb.

6. A toy according to Claim 3 or Claim 4, further characterised in that at least some of the limbs of the said figure terminate in a projection, forming part of the skeleton, over which is adapted to be fitted a selected limb termination member representing a hand or foot or the like, the said termination member being formed with a complementary socket for the said projection.

7. A toy according to any of Claims 3 to 6, further characterised in that the said head member consists of the said ball and a projection over which a selected head representing a particular character, animal or the like is adapted to be pushed, the said head having a complementary cavity for receiving the said projection.

8. A toy according to any of Claims 3 to 7, further characterised in that the skeleton is formed from a first relatively rigid plastics material, and in that each said body member is formed of a plastics material which is substantially less rigid than said first plastics material, whereby to confer upon all the said body

portions a soft feel simulating flesh.

9. A toy according to any of Claims 1 to 8, further characterised in that each said breakable region is broken, thereby providing articulation between adjacent said portions of the toy.

10. A method for the construction of an articulated toy, the method comprising a first step of moulding a single integrated structure comprising a plurality of members each generally rigidly connected to at least one other said member by a relatively narrow breakable region; the method being characterised in that it comprises carrying out a second moulding operation about a said structure whereby to provide a plurality of separate outer body portions about said structure adapted together to form a generally complete outer body for said toy figure apart from extremities thereof, each said outer body portion being formed generally about an end part of one said member and also about the adjacent end part of the, each or any other said member to which the first mentioned end part is connected by a said relatively narrow breakable region, and in that, at a time subsequent to completion of said second moulding operation and removal of said integrated structure together with said outer body portions from the mould employed for said second moulding operation, said breakable regions are broken to confer articulation to said toy whereby each said outer body portion is articulatable relative to its neighbours.

11. A method according to Claim 10, further characterised in that the first mentioned moulding step of moulding said single integrated skeletal structure and said second moulding operation are performed in the same mould, each half of the mould comprising a main outer tool and a first stage mould block and a second stage mould block which mould blocks are inter-changeable in a cavity formed in the main outer tool, the first stage mould block having cavities defining said integral skeletal structure, and the second stage mould block having cavities defining a generally complete outer body for said toy figure apart from extremities thereof.

12. A method according to Claim 11 adapted for the construction of an articulated toy figure representing a human, humanoid, animal or similar creature or a robotic equivalent, further characterised in that the main outer tool is provided with cavities defining bodily extremities of the figure, the bodily extremities comprising a head proper and limb extremities, for example hand and foot members proper, or projections for mounting thereon, subsequent to the moulding operation, a selected head proper and limb extremities proper; and in that said bodily extremities form part of said single integrated skeletal structure, whereby said single integrated skeletal structure is held in the said mould after the first moulding step when the first stage mould blocks are detachably removed from the said mould, the second stage mould blocks are substituted therefor and the second stage moulding operation is performed.

13. A skeleton for use in the construction of an articulated toy figure representing a human, humanoid, animal or similar creature or a robotic equivalent, the skeleton comprising a head member including a ball arranged to be located within the thoracic region of the finished toy figure and a plurality of additional skeleton members, characterised in that the head member and the additional skeleton members are moulded as a single integrated structure with each said additional skeleton member being generally rigidly connected to the head member or to a neighbouring additional skeleton member via a tapered region terminating in a relatively narrow breakable region, which breakable regions are adapted to be broken without loss of material in the completed toy figure thereby to provide articulation between head and thorax, limbs and thorax and between respective segments of the limbs.

14. A skeleton for use in the construction of an articulated doll representing a human or humanoid figure or a robotic equivalent, the skeleton comprising a head member terminating in a ball, respective upper arm members connected to the ball by respective relatively narrow breakable regions, and corresponding lower arm members connected to the upper arm members by respective relatively narrow breakable regions; the skeleton being characterised in that it further comprises a pelvic member connected to the ball by a relatively narrow breakable region, respective thigh members connected to the pelvic member by respective relatively narrow breakable regions and corresponding lower leg members connected to the corresponding thigh members by respective relatively narrow breakable regions; and in that the skeleton is moulded as a single integrated structure, the breakable regions being adapted to be broken without loss of material in the completed toy thereby providing movement in the completed toy doll simulating head and neck movement relative to the trunk, rotation of the trunk relative to the pelvis, movement of the legs relative to the pelvis, and shoulder, elbow and knee movement.

15. A skeleton according to Claim 13 or Claim 14, further characterised in that the said head member consists of the said ball and a projection adapted to receive a selected head and facial expression member representing a particular character and having a cavity corresponding to and adapted to receive the said projection.

16. A skeleton according to any of Claims 13, 14 or 15, further characterised in that one or more limbs of the skeleton terminate(s) in a projection adapted to receive a hand or foot member provided with a complementary socket adapted to receive the said projection.

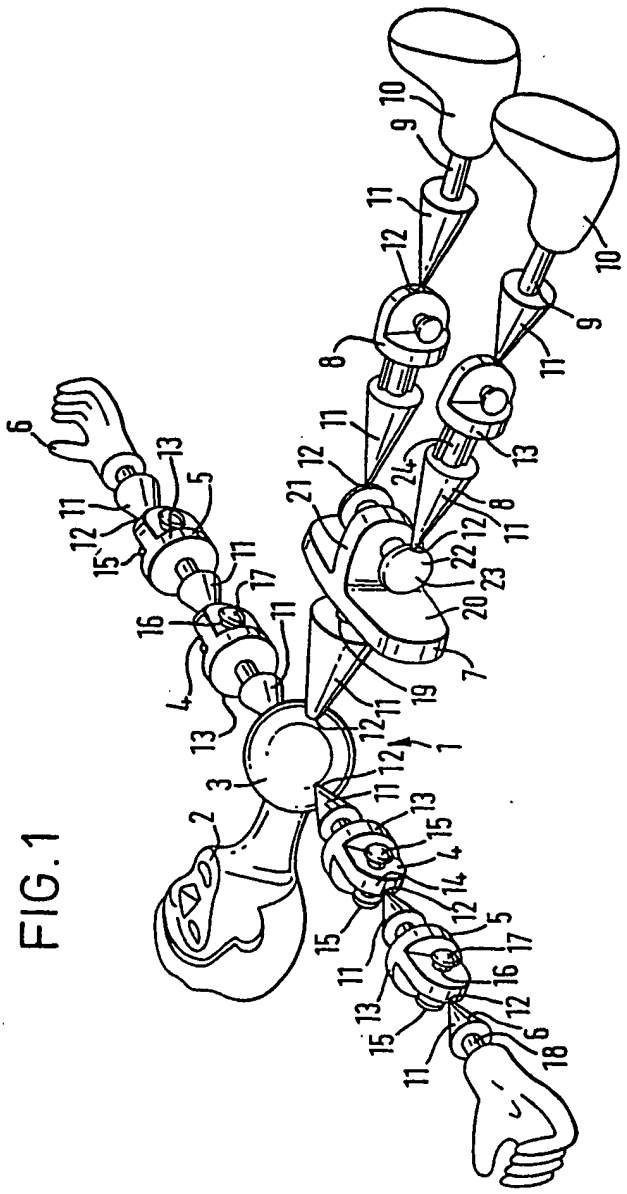

FIG. 1

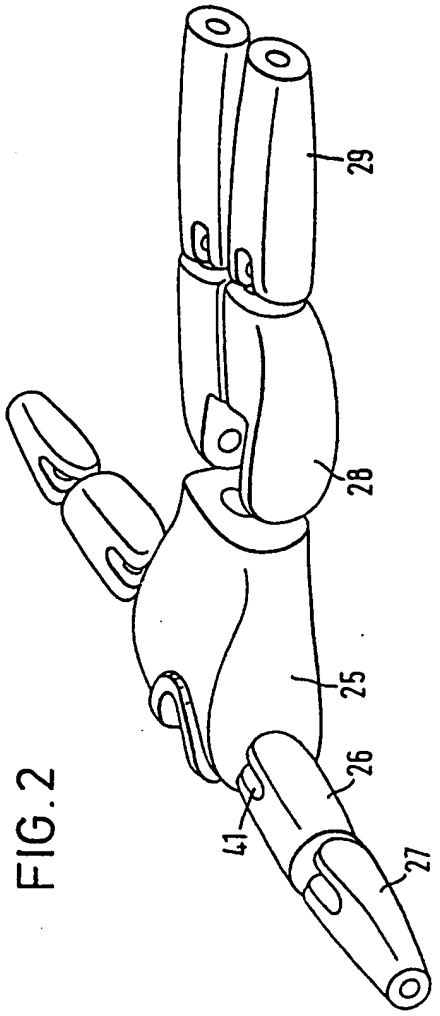


FIG.2

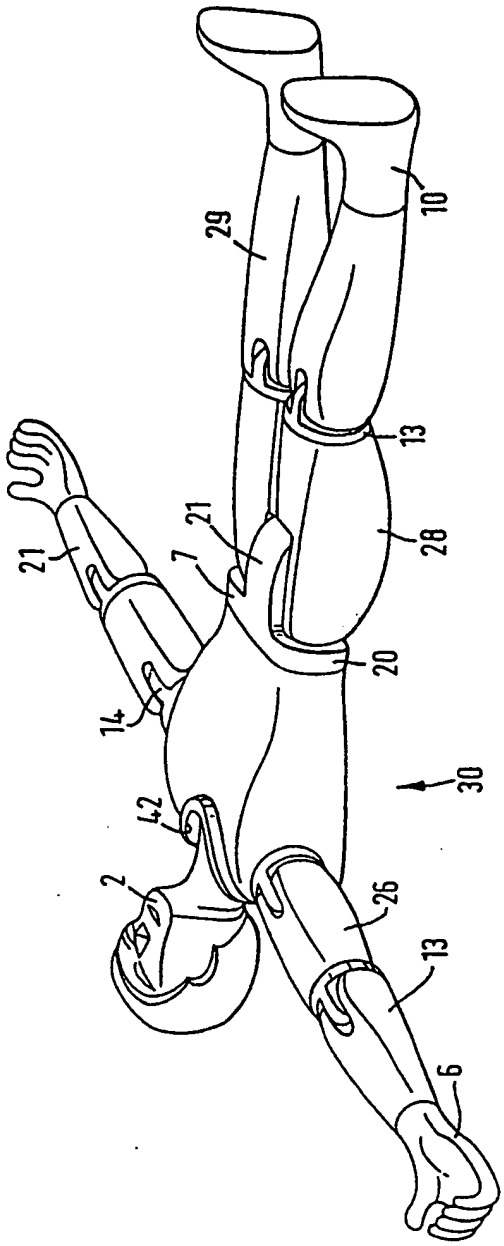


FIG. 3

FIG. 4

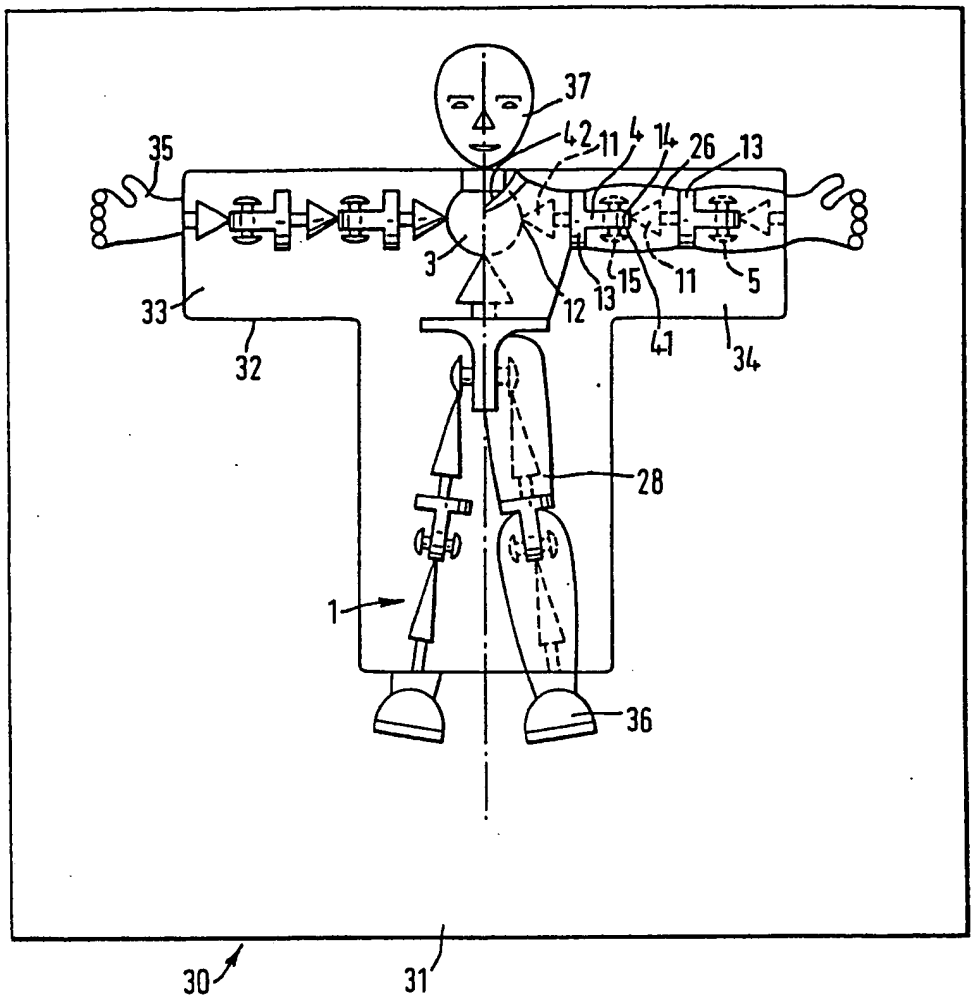

FIG.5